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ORIGINAL ARTICLE

Mycological and clinical study of Otomycosis in Tehran, Iran

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ABSTRACT
Otomycosis is a fungal infection, involves more than 10% of all otitis externa and characterized by otorrhea, otalgia, pruritis, hearing impairment, culture and identification of fungus. This study was aimed at the clinical study of otomycosis in Tehran. 200 patients admitted to otolaryngology clinics of Tehran University of Medical Sciences, between April 2006 to March 2008, based on clinical symptoms of otomycosis were evaluated in this study. Clinical manifestations of patients were including otalgia, otorrhea, tinnitus, and pruritis and hearing impairment. All samples were evaluated both direct examination and culture method. Samples incubated at 30° C and 37°C for 14 days and identification of fungi species was microscopically done by mycologist. From 200 patients, 114 patients (67 female, 47 male) showed otomycosis which 58 patients (50.9%) were between 30 to 50 years old, followed by 41 patients (35.9%) were under 30 years old and 15 patients (13.2%) were higher than 50 years old. The most common isolate was Aspergillus niger with 102 cases (89.4%) and followed by A. fumigatus with 6 cases (5.3%), Candida albicans with 5 Cases (4.4%) and Penicilium with 1 cases (0.09%) were fungi isolated from patients. The seasonal distribution of isolated fungi was as follows, 45% in summer, 25% in autumn, 18% in winter and 12 % in spring Of 200 patients admitted to ENT clinics, 57% showed otomycosis, so, proper clinical diagnosis abreast of mycological assessment is recommended to prevention of unnecessary administration of ototopical antibiotics.
Keywords: *Otomycosis, fungal infection*

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INTRODUCTION

Otomycosis involves more than 10% of all otitis externa and characterized by otorrhea, otalgia, pruritis, hearing impairment, culture and identification of fungus. The most isolated fungi are including *Aspergillus* spp. and *Candida* spp. especially in immunocompromised patients with otomycosis, however, other species such as dermatophytes and *Mucor* are isolated [1, 2].

Predisposing factors of otomycosis are immunocompromised condition, trauma by instrumentation of ear, long-term topical use of antibiotics and steroids and also high relative humidity and temperature [3].

High incidence of disease is reported in young adults; whereas, in higher age groups is considerably lower than others [4]. The main complications of patient are tympanic membrane perforation, invasive temporal bone infection and finally hearing impairment [5]. Otomycosis is mainly reported as unilateral in immunocompetent patients but occasionally considered as bilateral especially in immunocompromised patients [6].

Treatment is involved administration of antifungal agents as local or systemic, local debridement and prohibition use of topical antibiotics or steroids [7]. So, regarding the importance of otomycosis, this study was aimed at prevalence of otomycosis in patients admitted to Ear, Nose and Throat (ENT) clinics at different seasons in Tehran.

MATERIALS AND METHODS

200 patients admitted to otolaryngology clinics of Tehran University of Medical Sciences, between April 2006 to March 2008, based on clinical symptoms of otomycosis were evaluated in this study. Clinical manifestations of patients were including otalgia, otorrhea, tinnitus, and pruritis and hearing impairment. Samples using sterile swabs and speculum were supplied from external auditory canal and maintained in sterile tubes and sent to medical mycology laboratory of Tehran University of Medical Sciences. All samples were evaluated both direct examination and culture method. Direct examination of samples was done using glass sliders treated with 10% KOH as optical brightener and lactophenol.

Culture was done via inoculation of samples onto the Saubouraud Chloramphenicol agar (SC) (Himedia, India), Malt Extract agar (ME) (Himedia, India), Corn mill agar (CMA) and SCC (Himedia, India). Samples incubated at 30° C and 37°C for 14 days and identification of fungi species was microscopically done by mycologist. Pathogens classified according to the dermatophyte- yeast- mold (DYM) system.

RESULTS

A total of 200 patients (73 male (36.5%), 127 female (63.5%)) with clinical diagnosis of otitis externa were evaluated in this study. Among 200 patients, 114 patients were positive both direct examination and culture of fungi. Bacterial pathogens were isolated from 86 patients, which staphylococcus spp. was dominant species. From 114 patients, 58 patients (50.9%) were between 30 to 50 years old, followed by 41 patients (35.9%) were under 30 years old and 15 patients (13.2%) were higher than 50 years old.67 subjects (58.7%) were female and 47 patients (41.3 %) were male. The most common isolate was *Aspergillus niger* with 102 cases (89.4%) and followed by *A. fumigatus* with 6 cases (5.3%), *Candida albicans* with 5 Cases (4.4%) and *Penicilium* with 1 cases (0.09%) were fungi isolated from patients (Table - 1).

The seasonal distribution of isolated fungi was as follows, 45% in summer, 25% in autumn, 18% in winter and 12 % in spring. All patients with otomycosis were immunocompetent and none administrated antibiotics or steroid drugs. Only 1 patient had bilateral otomycosis and others showed unilateral otomycosis.

Table 1- Fungal species isolated from patients with otomycosis with regard to gender and season.

Fungal isolate	**Otomycosis NO. (%)**	**Season**				**Gender**
		Spring	Summer	Autumn	winter	Female: Male
Aspergillus niger	102(89.4%)	9	48	28	17	61: 41
A.fumigatus	6(5.3%)	2	2	-	2	3 : 3
Candida albicans	5(4.4%)	2	2	-	1	2 : 3
Penicillium spp	1(0.9)	1	-	-	-	1 : -
Total	114(100%)	14	52	28	20	67 : 47

DISCUSSION

In recent years, incidence of otomycosis because of increase in immunocompromised patients has been raised [8]. One of predisposing factor of otomycosis is long- term topical use of antibiotics and steroids drugs but in this study, none of patients have been administrated steroid drugs and were immunocompromised. Incidence of otomycosis in our study was seen 57% but kaur et al. are reported 74.7% and Barati et al. are reported 69% which were higher than our results (7, 8). Females to males ratio suffering from otomycosis, was high which in accordance with pontes et al. Anjena et al. and Ozcan et al. [9, 10, 11].

Incidence of otomycosis in summer and spring was highest and lowest, respectively. External auditory canal normal flora in normal persons doesn't permit to fungi growing and led otomycosis but mentioned predisposing factor could facilitate fungal growth. Dominant fungal species isolated was *A. Niger* with 89.4% which in accordance with Stem et al, Anjena et al. and Mahmoudabadi et al [12, 10, 13 and 14].

Second dominant fungal species was *A. fumigatus* but in study of kaur et al. was reported as dominant fungal isolate [7]. Third predominant fungal isolate was *Candida* which in studies of Pontes et al. and Parasad et al. was reported as predominant pathogen in otomycosis. [9, 15] Infection arisen from *Candida* spp. characterized by culture findings because it didn't show clear clinical finding (just otorrhea), so, otomycosis with *Candida* spp has special clinical importance. *Penicillium Spp*. was other species isolated in this study with 1 case which in accordance with mahmoudabadi [14]. 99.1% of patients showed unilateral otomycosis which in agreement to Wiswanata et al. and Barati et al. [16, 8].

Of 200 patients admitted to ENT clinics, 57% showed otomycosis, so, proper clinical diagnosis abreast of mycological assessment is recommended to prevention of unnecessary administration of ototopical antibiotics such as ciprofloxacin and consequently, further development of otomycosis.

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